

Application Number 09/737,540
Amendment dated October 7, 2003
Reply to Office Action of July 11, 2003

REMARKS

Claim 1 is objected to because of an informality. The claim is amended such that it is believed that the informality is corrected. Accordingly, reconsideration of the objection to the claim is requested.

Claims 1-4 and 7-9 are rejected under 35 U.S.C. §102(e) as being anticipated by Ohashi, et al. (U.S. Patent Number 6,184,143). Claims 5 and 6 are rejected under 35 U.S.C. §103(a) as being unpatentable over Ohashi, et al. In view of the amendments to the claims and the following remarks, the rejections are respectfully traversed, and reconsideration of the rejections is requested.

The applicants' invention is directed to a wiring of a semiconductor device. A first conductive layer is formed on a semiconductor substrate, and a first insulation layer is formed on the first conductive layer. The first insulating layer is planarized by a chemical mechanical polishing (CMP) process. As a result of the CMP process, a scratch is formed on the surface of the first insulation layer. A second insulation layer is formed immediately over the first insulation layer in contact with the first insulation layer such that the scratch is covered by the second insulation layer. A via hole is formed through the first and second insulation layers, and a second conductive layer is formed in the via hole such that it contacts the first conductive layer. A groove is formed in the second insulation layer, and a third conductive layer is formed in the groove. The depth of the groove is less than the thickness of the second insulation layer, such that any conductive material which may form in the scratch on the top surface of the first insulation layer does not contact the third conductive layer. This prevents bridging or shorting between the second conductive layer and third conductive layer caused by conductive material in the scratch.

The claims are amended to clarify certain features of the invention. Specifically, the claims are amended to clarify that the second insulation layer is formed immediately over the first insulation layer in contact with the first insulation layer. It is believed that this amended

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claim language clarifies the distinctions between the claimed invention and the device disclosed in the Ohashi, et al. patent. Specifically, Ohashi, et al. fails to teach or suggest a third conductive layer formed in a groove in a second insulation layer, wherein the groove has a depth less than the thickness of the second insulation layer and the second insulation layer is formed immediately over the first insulation layer contacting the first insulation layer.

The Office Action refers to Ohashi, et al. as teaching a first conductive layer 8 formed on a semiconductor substrate 4 and a first insulation layer 11b formed on the first conductive layer and planarized by a CMP process and having a scratch 11c on its surface. Ohashi, et al. is further characterized as teaching a second insulating layer 16c formed on the first insulation layer and a third conductive layer formed in a groove in the second insulation layer, wherein the groove has a depth less than the thickness of the second insulation layer. It is assumed that the third conductive layer is the rectangular conductor formed in the insulating film 16c between the interconnection 14 and the interconnection 18 (see figure 1 of Ohashi, et al.).

As illustrated in Figure 1, the insulating film 16c referred to in the Office Action as the second insulation layer is not formed immediately over the interlayer insulation film 11b, referred to in the Office Action as the applicants' claimed first insulation layer. While the third conductive layer of Ohashi, et al. is formed in the second insulation layer 16c to a depth less than the thickness of the second insulation layer, the second insulation layer is not immediately over the first insulation layer 11b, nor does it contact the first insulation layer 11b. These specific differences between the applicants' invention and the device taught by Ohashi, et al. are set forth in the amended claims. Accordingly, Ohashi, et al. fails to teach or suggest the invention set forth in the amended claims, and, therefore, it is believed that the claims are allowable over Ohashi, et al.

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Since Ohashi, et al. fail to teach or suggest the invention set forth in the amended claims, it is believed that the claims are allowable over Ohashi, et al., and reconsideration of the rejections of the claims under 35 U.S.C. §§102(e) and 103(a) is respectfully requested.

In view of the foregoing remarks, it is believed that all claims pending in the application are in condition for allowance, and such allowance is respectfully solicited. If a telephone conference will expedite prosecution of the application, the Examiner is invited to telephone the undersigned.

Respectfully submitted,

Date: October 7, 2003
Mills & Onello, LLP
Eleven Beacon Street, Suite 605
Boston, MA 02108
Telephone: (617) 994-4900
Facsimile: (617) 742-7774



Anthony P. Onello, Jr.
Registration Number 38,572
Attorney for Applicants

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